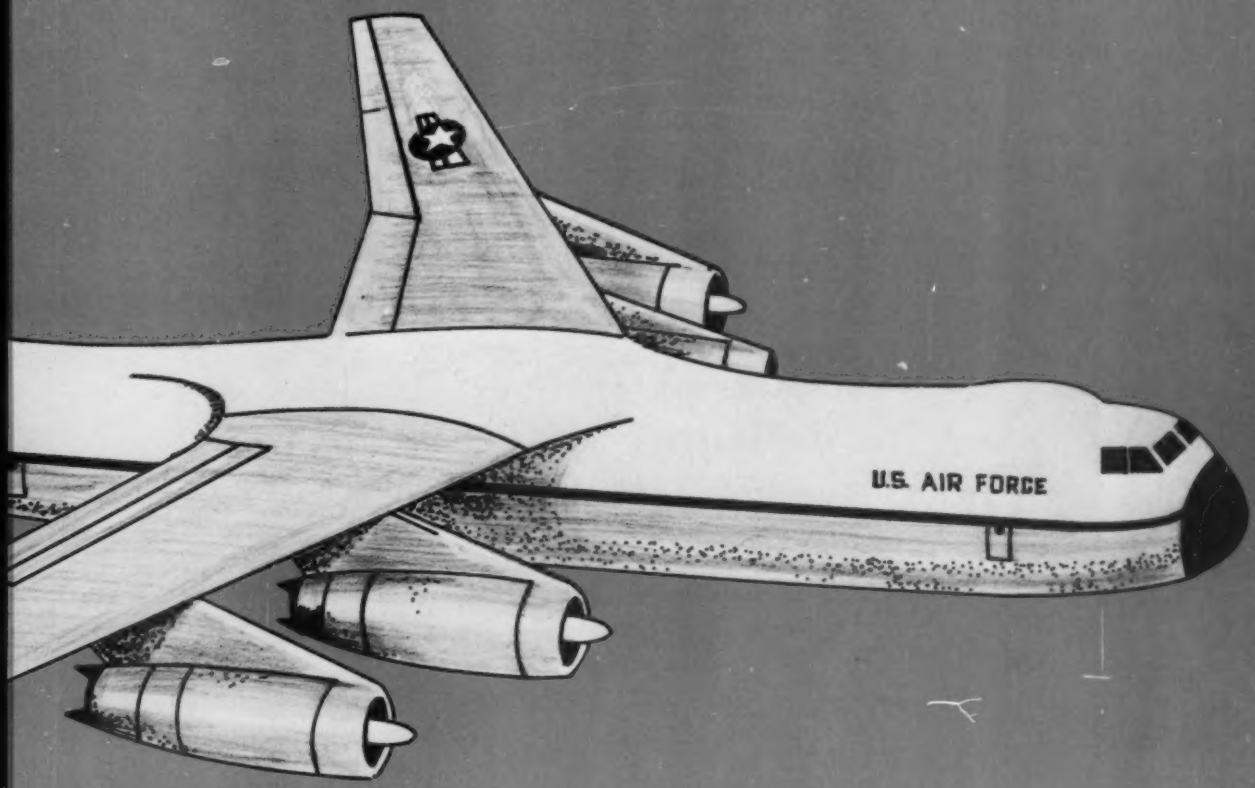
The MAC Flyer

JANUARY 1975



"Stretching" A Well Made Point. Page 3

The MAC Flyer

MILITARY AIRLIFT COMMAND

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For Greater Efficiency
in MAC Air Operations

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Contributions, comments, and criticisms are welcome. Write: The Editor, The MAC Flyer, MAC/IGFE, Scott AFB, IL 62225, or call: (618) 256-3534, Autovan 638-3534. The Editor reserves the right to change manuscripts to improve them or correct technical errors.

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Flyer Call

If you're one of our regular readers, it won't take you long to find that this month's issue is flavored toward maintenance and supply — written, we hope, in language that aircrews and maintenance personnel alike will find interesting and informative.

Some of the stories were written jointly by members of the MAC/LG staff. Others were authored individually. It came as no shock to us that there is a lot going on in logistics but we were a little surprised to learn of so many programs directly affecting aircrew members. We think that you will agree this is true after reading some of the articles.

One story featured this month deals with the stretch version of the C-141. That a stretch Starlifter is being considered is nothing new, but the information provided us by MAC headquarters and Lockheed - Georgia Company translates into a closer look at specifics.

If you're not turned on by these articles, there is one we've included that many of you probably will identify with. It's about the last flight of the C-124 — this time to the boneyard — and was written by Lt Col Arthur Eddy of the Georgia Air National Guard, the man who flew it there.

Ten Years Old and Still Growing

by Maj George D. Burgess, Associate Editor

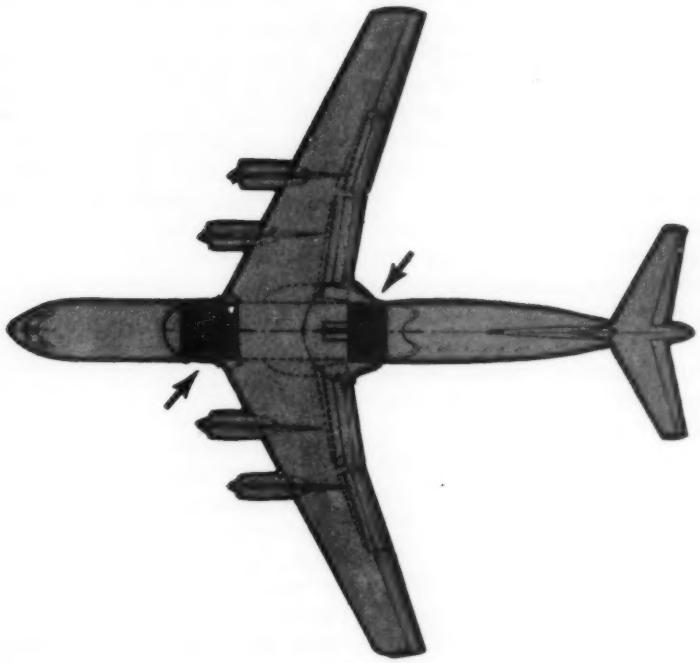


Figure 1

If it's good, making it bigger will make it even better."

This adage obviously doesn't hold true for all systems, but it has particular significance for one Air Force weapons system. USAF and civilian engineers are looking at ways to make the C-141 bigger and better. If proposals prove feasible, we could see a "B" model Starlifter in a few years. Modifications under study include "stretching" the cargo compartment, adding aerial refueling (AR) plumbing, and "cleaning up" aerodynamic drag on the wings. There is no guarantee that MAC will modify its present C-141 fleet, but plans have been made for one stretch prototype. The success of that one could be the key to a fleet-wide modification.

Stretching, Fitting, Cleaning

Fuselage stretch plans call for an added 23 feet, enough to accommodate three more cargo pallets. This new 13-pallet capacity would increase the cargo compartment volume by 30 percent. Two sections of new fuselage will be fitted to the old fuselage, one just forward and one just aft of the center wing section. See figure 1. Weight bearings throughout the extended floor will not be degraded; therefore, the stretched model's floor will withstand the

normal cargo weights and will maintain an aerial delivery capability. Added fuselage and equipment will jack the C-141B's basic weight up about 10,000 pounds.

In addition to stretching the aircraft, present plans call for an aerial refueling receptacle on top of the fuselage just behind the cockpit. The AR option will greatly extend the range and make the "B" model virtually independent of en route foreign landing rights. The maximum gross weight of the aircraft will normally remain 325,000 pounds, the same as the "A" model's. Without AR, the "B" model can achieve slightly higher average payloads because it is not as volume-limited as the "A" model.

A plan for aerodynamic drag cleanup calls for removing the vortex generators and stall strips presently installed. This also entails fitting new wing fillets which will reduce drag and redirect airflow across the wings, thereby changing the center of lift and extending wing life. Designers are hoping for a net decrease of one and one-half percent in drag which will allow the "B" model to cruise at speeds higher than the "A" model or save on fuel at slower speeds.

Performance

Lockheed-Georgia Company figures show that where refueling stops are spaced at 1,900 n.m., the average MAC payload on the "B" model will be increased by 10,000 pounds without using AR. This increased payload capability is possible, even with the added fuselage weight, because the C-141A model's maximum allowable cargo volume is usually reached before its maximum allowable cargo weight. The stretched aircraft will be particularly efficient at transporting low density cargo.

On short hauls without AR, or on longer legs with AR, the larger cargo space could mean increased cargo weights per sortie. Said another way, fewer sorties will be needed to haul a given amount of cargo on short or medium range legs. This could result in increased service life on the air frames since the plane will be required to fly fewer hours for a given mission.

Projected takeoff performance is expected to be slightly improved for the stretch C-141 compared to the standard model as long as each is limited to the same maximum takeoff gross weight. Once airborne, the new, "cleaner" aircraft is expected to outclimb the present model and gain in cruise airspeed and cruise altitude capability. Landing distances for both aircraft will be approximately the same at equal gross weights.

Other Factors

To hold down costs, there are no present plans to modify the air conditioning units under the stretch program. However, some changes, such as additional fans or hot air ducts and insulation, will be needed due to the increase in fuselage volume.

The "B" model is programmed to operate during a contingency at a 2.25 G-factor, which will permit a maximum takeoff weight of 344,900 pounds. The 2.50 G-factor presently used for the "A" model is based on a 325,000 maximum weight. However, during peacetime operations, the stretched model will operate within the 2.50 G-factor to preserve service life.

What these future plans could mean to MAC is C-141 air refueling capability, less dependence on en route foreign landing rights, higher average cargo volume per sortie, and greater flexibility in airlift operations.

Summary

There is no assurance now that we'll ever see all of MAC's C-141s converted to the "B" model configuration. But if you look skyward in a few months and see an elongated Starlifter winging by, you'll probably be viewing a prototype showing off its increased size and added capabilities. And if these prove feasible, then the whole fleet might just put on a little weight around the middle — in the interest of greater airlift capability.

Capt Bergez and Crew

Left to right: SSgt Roger L. Barre, crew chief; Maj Anthony P. Dowd, hoist operator; 1/Lt Thomas M. Bante, copilot; and Capt David J. Bergez, aircraft commander.

It was late at night when a crew member answered the ringing telephone in the operations room at Det 8, 37 ARRS, at Vandenberg AFB, Calif. A disabled boat was adrift off the California coast and the Long Beach Coast Guard Rescue Coordination Center asked for helicopter assistance in locating it.

After learning all available details, Capt David J. Bergez promptly briefed his crew. In a few minutes, their TH-1F lifted off the pad and accelerated in the direction of the search area, not far from the base.

The chopper climbed to 2,000 feet, but the visibility wasn't very good so Capt Bergez descended to 1,500 feet where visibility was better. About an hour after the aircraft had become airborne, one of the crew members spotted what appeared to be either a red light or a flare on the ocean. As the pilot turned the Huey toward the light, Maj Dowd, acting as hoist operator and scanner, looked out of the cabin door and noticed white smoke streaming from the engine exhaust. As he reported the smoke to the pilot, the master caution light and speed decreaser gear box (SDG) oil pressure warning lights came on. The SDG pressure gage began fluctuating and the pressure decreased rapidly.

Deciding that he should get the aircraft on the ground as quickly as possible, Capt Bergez turned toward land and began a shallow descent, using minimum power to conserve the faltering engine. The chopper passed through 500 feet and was inching its way toward the shore when suddenly the master caution light and engine oil pressure warning lights illuminated and the engine failed completely.

Lieutenant Bante, the copilot, hurriedly radioed a "Mayday" as Capt Bergez entered an autorotation.

Not close enough to make it to the shore, the pilot realized that he would have to put the helicopter down in the dark ocean. As they continued their powerless descent, the crew jettisoned both pilot doors and opened both cargo doors to allow prompt egress once they were in the water. By now the helicopter was low enough so that its landing lights illuminated the murky sea just below. The pilot eased in the collective and the helicopter touched down in a level attitude with little forward airspeed.

As the helicopter came to a stop, all four men scrambled out of their assigned escape exits and inflated life vests as they entered the water. They watched, helplessly, as their Huey quickly rolled onto its side and sank.

As the crew bobbed in the darkness of the Pacific Ocean, they wondered whether their "Mayday" would bring a prompt response. Fortunately, a coast guard cutter working in the rescue effort heard their distress call. As it approached, one of the crew fired a Mark 25 flare to mark their position. Within 35 minutes after the powerless bird had impacted the water, the cutter pulled alongside the cold, wet airmen and pulled them to safety.

Ditching a helicopter at night is one of the most difficult and hazardous undertakings that faces any helicopter crew. To perform it successfully requires a precise combination of judgment, procedure, crew coordination, and basic flying skill. Capt David J. Bergez and his crew exhibited these in a remarkable feat of airmanship.

THE MAC FLYER is proud to offer its traditional "Good Show" to this outstanding crew for its superior performance under the most demanding circumstances.

The End of an Era – Old Shakey Bows Out

by Lt Col Arthur Eddy
165 MAG (ANG)
Savannah, Ga.

"Starting engines check," for the last time.

"I hear that C-130 a-flyin' overhead,
I'm down here at 8,000, a-wishin' I was dead.
Cause I'm stuck in big Old Shakey and time keeps draggin' on.
When I hear a prop-jet call sign, I hang my head and moan."

Maj Orlen L. Brownfield

I was the last pilot to fly the C-124.

That must sound odd to those of you who have flown old Shakey. But it's true. She's gone for good, and there are those who said she would fly forever.

My crew and I flew the last one to Davis-Monthan AFB. I don't like to refer to the storage area as a "boneyard." Sounds too final. I've always been sentimental when it comes to planes. And I have more than 6,000 hours in this one.

It is an unusual morning, the last one for Shakey . . . a lot of people are around to see us off at Savannah Municipal Airport, home of the 165th Military Airlift Group (ANG), my outfit. They know that the last two Old Shakeys are about to exit. The last one flying in the Alaskan Air Command has already been retired.

I file my flight plan and the FAA forecaster promises good weather. I walk down to the canteen for a last minute breakfast, as I have for years. The rest of the crew is already there and the press is talking with them. It's a pretty good news item for the local papers. We sit around for a while, then walk out on the ramp toward 30044. She has been a good bird.

Some of the reporters follow us out for last minute photographs at the airplane. In a few minutes I hear myself saying, "Before starting engines checklist," and I realize that it is for the last time. The four 4360s thunder smoothly as we taxi out and check the brakes. The brakes emit that unmistakable scream that has astounded non-flying onlookers for years. The bird checks out good on runup and Savannah Tower gives us takeoff clearance. We thunder down the runway and as we lift off, I notice more photographers along the edge of the runway. I feel like a celebrity until I remember why they're here.

Everything's going well on climbout, so we circle around for the prearranged flyover. The folks below get one last look as the symbol of an aviation era passes overhead and disappears into the western sky. We level off at 6,000 feet. Two thousand feet above us and a few miles ahead is our sister ship piloted by Lieutenant Colonel Edgar Benson, our Air Force advisor. It departed just before we did.

My crew is a typical mixture of weekend warriors and air technicians. Major Tom Fox, copilot, a real estate broker from Woodstock, Georgia; SMSgt Tom Davis, the ranking flight engineer and a full-time air technician. Tom has a double reason for feeling nostalgic about this flight. He retires from service a week after a colorful career that began in the Air Corps in 1939 and almost ended in the Bataan Death March. The other flight engineer, MSgt Eugene Weitzel, from Asheville, North Carolina, is self-employed. TSgt Thomas May, loadmaster, is partner in a thriving salvage business.

Lt Col Eddy

End of an Era

We talk about the old days in th C-124. I was first introduced to it when I was an Air Force reservist at Donaldson AFB, South Carolina, long since closed. I flew C-45s at the time, and later, C-46s and C-119s. The active duty force at Donaldson was equipped with C-124s. To me, it looked like the Queen of the Skies. And was, back then. I remember walking under one of them, marveling at its size. It was a little like walking around a C-5 today. It never occurred to me that in few years, in 1961, my unit would become the first reserve outfit to fly Shakeys and would also be recalled to active duty that year.

In the years since then, I, like thousands of other MAC crew members, have visited nearly every corner of the world in the C-124. We used to call her the "Douglas Hotel" when crew quarters were unavailable. In its heyday, we were a part of a vast, well-coordinated network of men, machines, and material that shuttled cargo and passengers worldwide. I felt like a member of an elite club. It was a bright era for aircrew members.

But the "good old days" weren't just all steak and eggs at Lajes or lobster at Harmon. They were bullets at Elizabethville, feathered engines in mid-Atlantic, and bone weariness after 20,000-mile round trips to Southeast Asia. You could always distinguish a C-124 crew when it emerged from long hours of noise, vibration, and other strains peculiar to long flights in a prop job. But time usually softens unpleasant memories and causes us to focus on the pleasant ones. So it is today.

We drone on over Texas where we encounter thunderstorms. And, true to form, our radar suddenly goes blank. The other C-124 is still in sight above us and it guides us through. No sweat. We start making plans for our arrival at Davis-Monthan.

Suddenly, the autopilot goes berserk and our nose jerks upward toward the sun. Perhaps the old girl is trying to tell us something, like a nervous old horse being led to the glue factory. She longs for her master's touch. So we disengage the autopilot and fly by hand. Then the VHF starts to go. Yes, it's about time to put her on the ground.

Tucson Approach feeds us to Davis-Monthan GCA and after a turbulent final approach to runway 12 we're crossing the threshold. I feel for the runway, hoping to make it a good one. Old Shakey touches down for the last time.

A follow-me leads us toward the receiving area. We park with our nose almost against the tail of our sister ship. I call for the engine shutdown checklist.

"Cut engines," I command.

"I don't really want to," the flight engineer replies. But he does, and we all sit there, in the quiet, for a few moments. Then we make our way down the flight deck ladder and out the crew hatch.

A sergeant at the aircraft receiving desk buys the plane very unceremoniously. It's old hat for him. We call for wheels and begin the routine arguments over which hotel we should check into.

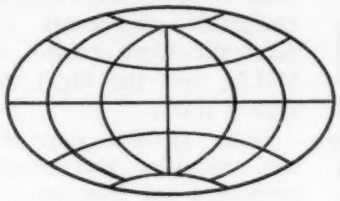
After that's settled we load our bags onto the vehicle. In a few minutes the driver starts the car and we are on our way to town. I don't look back.

Old Shakey has retired.

The last two C-124s make a farewell salute.

ABOUT THE AUTHOR

Lt Col Eddy graduated from Aviation Cadet pilot training in 1944, after which he flew B-24 bombers in the South Pacific. He joined the Air Force Reserve in 1945 and has served in either the Reserve or Air National Guard continuously since. During this period he flew the C-45, C-46, C-119, and the C-124, logging almost 10,000 total flying hours, 6,000 of them in Old Shakey. He is presently a technician and safety officer with the Georgia Air National Guard.



Global Notes

award winners

MAC Distinguished Individual Safety Awards were earned by the following crewmen for their professionalism during critical emergencies:

Capt Henry F. Morrissey, Det 1, 37 ARRS, Davis-Monthan AFB, Ariz. — When a helicopter vibration increased to the point where he could not hear his copilot over the intercom, Captain Morrissey made a controllability check on his UH-1F and tried for a precautionary landing. At approximately 10 to 15 feet AGL and 15 to 20 knots ground speed, the helicopter began a gentle right turn. Captain Morrissey applied left pedal, momentarily stopping the turn, but then the aircraft began a violent right turn. He then stabilized the aircraft, rolled the throttle to flight idle, and autorotated. The helicopter landed in a level attitude and then rolled over on its side. Captain Morrissey's precise analysis of the situation and instantaneous action possibly saved his crew.

Capt David J. Bergez and his crew, **Maj Anthony P. Dowd, 1st Lt Thomas M. Bante,** and **SSgt Roger L. Barre,** Det 8, 37 ARRS, Vandenberg AFB, Calif. — Teamwork and close coordination marked the actions of these four crew members when engine failure forced them to ditch their TH-1F helicopter into the Pacific. How they coped with a testy situation is described in "Good Show" in this issue.

CMSgt Wayne A. Skelton, 437 MAW Logistics Plans Division, Charleston AFB, S.C., contributed significantly to the wing's accident prevention efforts. He recognized inadequacies in aircraft parking and taxi lines as the wing changed over from C-5 and C-141 aircraft to an all C-141 fleet. He initiated the planning and coordination for remarking the ramps and taxiways and personally supervised the operation. His untiring efforts were instrumental in preventing taxi accidents by removing potential hazards.

Capt Alan A. Kirchoff and his C-5A crew from the 436 MAW, Dover AFB, Del., were climbing out from U-Tapao RTAB, Thailand. The number three hydraulic system lost fluid rapidly and a scanner reported evidence of fire. Engine control circuit breakers popped and cockpit annunciator lights signaled multiple malfunctions. The crew shut down number three engine and discharged the fire extinguisher, bringing the fire under control. Capt Kirchoff and crew returned and landed safely at U-Tapao. The crew consisted of Capt Richard S. MacIsaac, 2d Lt John R. Dieltz, MSgts Terry P. Missler and Marvin K. Andrews, and SSgt Kennie E. Day.

Capt John W. McClenny and his C-5A crew from the 436 MAW, Dover AFB, Del., experienced a serious engine fire and explosion during takeoff roll at Ramstein AB, Germany. The first indication of trouble occurred as the aircraft approached refusal speed of 120 knots. At this point, a severe explosion racked the aircraft and number three engine instruments indicated an engine flameout. A crew member reported that number three engine cowl doors had separated and the engine was engulfed in flames. Capt McClenny and the copilot immediately initiated abort procedures with fog, low visibility, and a wet runway adding to the problem. Capt McClenny stopped the aircraft on the remaining runway and directed emergency shutdown checklists. Both fire extinguisher bottles were discharged but a residual fire persisted. The crew evacuated the aircraft and the fire department extinguished the remaining fire. The crew consisted of Major Arthur L. Sclater, Capt Kurt P. Smith, TSgt Gerald L. Owen, and TSgt Boyce K. Ward. Their alertness and highly professional reactions to a serious emergency during a very critical phase of flight probably averted a major aircraft accident.

15,000 accident-free hours

SMSgt Stewart E. Holmes, 6 MAS, McGuire AFB, N. J., has completed 15,000 flying hours without an accident. A letter of commendation has been forwarded by General Carlton to Major General Kearney, 21st AF commander, congratulating Sergeant Stewart on his remarkable achievement.

After two years of equipment updates, we find that...

Galaxy Avionics Mods Are Bearing Fruit

Back in the early days of the C-5, avionic system growing pains often stretched the patience of aircrew and maintenance personnel alike. Systems like the multi-mode radar, inertial doppler navigation equipment, and the automatic flight control system caused not only in-flight problems but disturbingly high ground times as well.

Navigators probably did a lot of swearing at early C-5 navigational equipment. And little wonder. Too often tacan, radar, and loran failed to update, inertial measurement units malfunctioned, and computer malfunction lights illuminated.

Navigators weren't alone in their dilemma. Pilots were beset with erratic flight director systems — tumbling attitude indicators and diverging or erratic compass systems. Nor was it a picnic to nose the Galaxy through a line of build-ups with a doppler drift stabilized, multi-mode radar. Even the flight engineer frequently found himself staring at gaping holes in a panel where his MADAR (malfunction, analysis detection and recording) system should have been.

It didn't take long before MAC Logistics personnel decided that something must be done. They had only to glance at the reliability rates to know that all was not as it should be. Commanders down the line let the Logistics folks know that the frustration factor was up and generals up the line were becoming increasingly agitated at the problem.

To combat the avionic systems dilemma, in 1972 MAC Logistics implemented an extensive modification program designed to iron out key avionic problems. Today that program is beginning to bear some very sweet fruit.

One of the first actions was to identify specific systems for update and modification. Some of these included the multi-mode radar (MMR), inertial doppler and navigation equipment (IDNE), automatic flight control system (AFCS), and the flight director system (FDS).

Some systems have already been modified and others are scheduled for completion soon. A brief resume of system shortcomings and corrective actions will give aircrews and maintenance some idea of what to expect from the modified and updated equipment.

Multi-Mode Radar (MMR)

The multi-mode radar was designed to operate in six different modes on X-band and Ku-band frequencies. Radar modes were further divided into two operational channels. Weather, mapping, and beacon modes are in the horizontal channel. Contour mapping, terrain following, and radar approach functions are assigned to a vertical channel.

Although horizontal channels

Equipment malfunctions provided early aircrew frustrations.

were operational on early aircraft, they did not function reliably; vertical channels were not operational at all.

To correct these deficiencies, MAC Logistics initiated a series of engineering changes to provide greater reliability to the horizontal channels, often used for weather avoidance, and upgrade vertical channels to full operational status. Changes were incorporated in 13 of the 16 radar line replaceable units (LRUs — easy in, easy out black boxes), updating the MMR. San Antonio Air Logistics Center began the radar update in 1972, and it was completed, fleet-wide, late in 1974. To meet completion deadlines, MAC C-5 maintenance units performed the radar modification of several aircraft at base-level. By the end of June 1974 all MAC possessed C-5s had the updated multi-mode radar installed. The updated version has improved mission reliability and provided C-5 aircrews with increased capability for weather penetration, terrain avoidance, and contour mapping.

Inertial Doppler Navigation Equipment (IDNE)

Another system currently undergoing corrective surgery is the navigational nucleus of the C-5 — the IDNE. This extremely complex and highly integrated navigational system, although utilizing advanced state of the art, has experienced reliability problems. To correct these deficiencies, MAC Logistics identified those IDNE components with high failure rates and pooled the talent of Systems Command and air logistics centers to establish an IDNE update program.

This program has been in high gear for over a year. Most of the program's efforts are directed at changing nine of the 11 IDNE line replaceable units. The complexity of this program required long turnaround times at modification facilities. This, along with a shortage of LRUs, made it difficult to accomplish modifications and simultaneously support aircraft out on the line. To allow system support for both the IDNE update program and line aircraft, IDNE updates are now being accomplished on an attrition basis.

The first updated IDNE system was installed in October 1973. As of this writing, MAC Logistics has completed updates on 45 percent of the IDNEs, and completion of the entire update program is scheduled for mid-1976. Once this happens, the modified IDNE

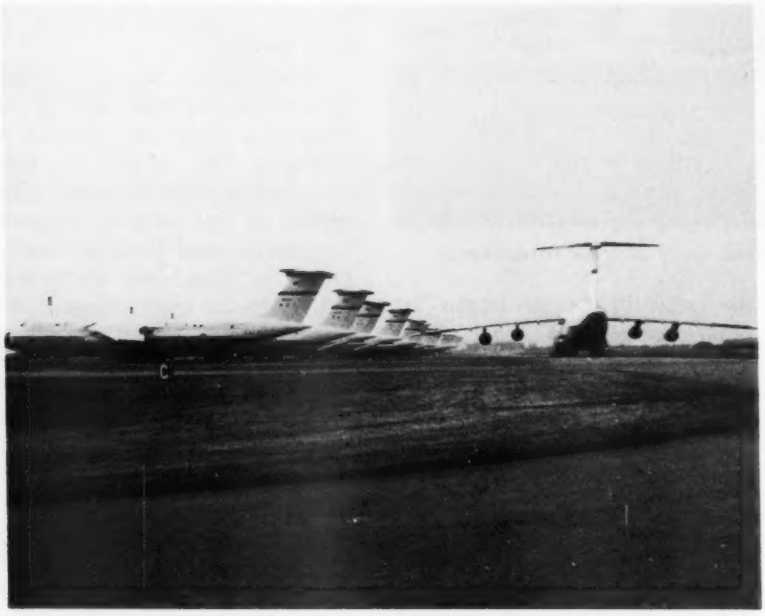
will provide a system that is more reliable and more easily maintained.

Automatic Flight Control System (AFCS)

Initially operational only in the basic attitude, altitude, heading hold, and heading select modes, the autopilot before modification and update was limited to basic climb, cruise, and descent profiles. Built In Test Equipment (BITE) and MADAR troubleshooting capabilities were also limited and the auto-throttle system could not be used. But all this has changed.

Automatic flight control systems have undergone an extensive update program that is enabling crews to utilize its full potential. This update changed all six AFCS LRUs, allowing the use of altitude capture, mach and IAS Pitch hold, control wheel steering, vertical navigation (Vernav), radar approach, terrain following ILS approach, and auto-land functions. The auto-throttle system will also be operational and pilots will be able to select direct throttle, IAS hold and adjust, mach hold and adjust, alpha hold, and go-around and flare functions. And the maintenance troops weren't forgotten either. Installation of BITE and MADAR troubleshooting circuits in the updated AFCS will provide increased capability to quickly determine a malfunctioning component and expedite logistical support.

MAC received the first C-5 equipped with the updated AFCS in May 1973. Since then, most of the C-5 fleet has been so equipped. AFCS modifications on the remaining aircraft should be complete this month.



Modifications have increased avionics reliability.

Flight Director System (FDS)

The initial C-5 flight director system was an interim configuration providing crews with minimum navigation modes and, unfortunately, occasional unreliable instrument displays. These deficiencies prompted MAC Logistics, in collaboration with Systems Command and the manufacturer, to dig deep into the flight director system to identify and correct system faults. Avionics experts narrowed down the cause of the difficulties to one area — the flight director computer. Consequently, the computers are undergoing extensive modifications and are being installed along with a new auxiliary nav select panel. This panel is located adjacent to the existing nav select panels and provides the pilot with two new flight director modes — go-around and VOR approach and VOR cruise modes. Completion, fleet-wide, of this program is also scheduled to end this month.

Mission Impact

These extensive update programs will boost C-5 operations in two key areas — mission capability and performance dependability. Once the program has been completed, the C-5 will perform its mission more efficiently in the air and with much less attention on the ground — and that's good news for both flight and ground crews.

1975 FLYING SAFETY WRITING CONTEST

Sharing your aeronautical adventures at the Yokota Stag bar, the Torrejon Club, or in the squadron hallway is one way to help your buddies avoid hazardous situations. But why limit your audience to a handful of guys when you can get the attention of crew members throughout MAC, the Air Force, and just about every major airline in the free world?

Plan right now to enter the 1975 MAC Flying Safety Writing Contest. The contest is open to all. While only military personnel and DAF civilians assigned to MAC or MAC reserve forces are eligible for awards, anyone can submit an entry which, if selected, will be published. Keep in mind, your fellow aviators want your story now.

Perhaps you've witnessed or even been involved in some hazardous flight situations out in the system. Maybe adverse circumstances or aircraft status almost caught you with your guard down at flight level 350 or at decision height — but you made it through okay. What about the crews who haven't been there yet — the green aircraft commander honchoing his first winter mission to the Aleutians or that edgy crew sweating an instrument approach into Norfolk NAS?

STORY GUIDELINES

The contest ends 31 March 1975. The first three winners will receive engraved walnut desk sets. Honorable mention winners will be awarded impressive plaques.

Entries must be original, unpublished, and have a flying safety message. Please limit entries to between 1,000 and 3,000 words. That's about 6 to 14 typewritten pages, double spaced. Mail your entry to:

MAC Flying Safety Writing Contest
MAC/IGFE/Stop 114
Scott AFB IL 62225

Entries must be postmarked no later than 31 March 1975 and must be received at THE MAC FLYER on or before 7 April 1975. But don't wait until then. Get it together now!

A Little Formology

Little Jimmy Jet learns the hard way that reporting aircraft mafunctions is the best policy.

by Maj Garnett C. Brown, Jr.
MAC/XPRC
Scott AFB, Ill.

James Henry Jamjet III, Squadron Pilot Extraordinaire, scratched his head as he pondered a knotty problem. "Should I take Karen to Happy Hour on Friday, or should I go alone and see what turns up?" He decided Karen would be there anyway, and it wouldn't do him any good to be caught ogling the other tooties. His reverie was interrupted by the ops officer.

"Jim, don't forget the fly safe meeting at 1400."

"Aww, come on, chief, I'm on pre-departure crew rest."

"Not till 1700, pal. I review the schedule, remember?"

"I guess that's what I get for checking in my magnificent person. Actually, it's my turn at Squadron PUDCAC."

" PUDCAC?" the Ops Officer asked.

"Publication Update and Coffee Area Cleaning," he said with a wide grin.

"Jamjet, you've got a warped sense of humor," the ops officer said as he continued down the hall.

The 1400 fly safe meeting started promptly at 1412 with the harried squadron safety weenie nervously introducing the program:

"We'll talk about the incidents and accidents since our last meeting, and Sergeant Shod will say a few words about our ground safety record. Captain Glands, the flight surgeon, was scheduled to brief us on the hazards of slow dancing with natives of a certain Eastern nation, but the squadron commander wouldn't let him in the building till he got his hair cut! So instead, we'll have Major Mouth from the wing safety shop tell us about MAC's latest safety gimmick, er, efforts . . ." and so it went.

Jimmy's consciousness wandered throughout the meeting as he thought about the safety presentation, his scheduled mission, and Happy Hour with Karen Kool-klutch. As his mind came around to the podium again, the speaker was discussing use of the AFTO Form 781 to document aircraft mechanical difficulties.

". . . so if you have a problem, be sure to write it up, so it doesn't catch the next guy. There has been more than one accident . . ." and Jimmy's mind wandered back to an interesting structural support problem occasioned by Karen's anatomy. The shuffling that preceded the "final word" brought him around again.

"THE MAC FLYER is asking for stories, articles, photographs, etc., that can be used to promote 'safety and efficiency in MAC air operations.' They asked that we remind you of their annual writing contest."

As everyone walked out, Jimmy was flanked by Lieutenant Fred Grunge, the acting assistant Squadron Couth Officer. (Fred was reputed to be the dynamic masked Streaker who debuted at the Officer's Wives Club Spring Formal. He was formal — the mask was black.)

"What they ought to do to promote safety and efficiency is easy," Fred was grinning. "Just limit crew duty to five hours, move all the simulators to Nellis, and cut out all night and weekend flying. Look at all the gas we'd save. And what a retention rate!"

* * *

As Jimmy was driving out early the next morning for his mission, he again thought about the FLYER's safety writing contest.

"If I could write, what on earth would I write about? Aside from a failed toilet-flusher, about the

most exciting thing that's happened to me lately was an electric trim failure. And after I used the alternate system for awhile, the main system came back in. I don't think I even bothered to write that up." Those thoughts disappeared as he rounded the corner and approached the squadron building.

The briefing and preflight preparation went well, and they were ahead of schedule as crew transport pulled up to the aircraft. The sun's first rays illuminated the tail in a picturesque fashion that triggered remembrance of the numbers painted there.

"One-six-five! That's the one I flew the other day with the trim problem. Wonder if they had any other problems with that?" But as the pace of getting ready for another on-time aerospace launch quickened, he forgot all about it. He didn't remember again until after takeoff.

Jimmy was trimming the aircraft in response to the configuration change caused by raising the gear and flaps. As the speed increased, he noticed the trim didn't seem to be having any effect. A quick glance at the pitch trim gage, while his thumb was mashing the trim switch, verified nothing was happening.

"Damn," he thought as he reached for the alternate trim switch, "there it goes again!" As he selected the alternate position, the pitch trim began to run away towards the nose-up position. Jimmy felt the aircraft finally responding to his inputs and then progress to an increasingly uncomfortable nose-up condition. "It's running away!" he called to the copilot as he hit the disconnect. No effect! He started rolling into a bank as he switched back to the normal system and hit the disconnect again. The stabilizer movement stopped.

After slowing his speed, calling the operations center, and conducting a controllability check, Jimmy decided to jettison fuel and attempt a landing with the out of trim condition. As it turned out, the landing proved relatively routine.

"Nice job, son," his squadron commander was saying as Jimmy filled out the Form 781.

"Not really, sir," Jimmy answered. "Oh, I'm glad enough to have successfully terminated the emergency, but this one shouldn't have happened in the first place."

"Why not?" the CO asked.

"Because I had a trim problem in the same bird last week, and because it was minor and corrected itself, I didn't write it up. You know, they say 'write it up, so it doesn't get someone else.' What they ought to say is 'write it up so it doesn't get YOU!' "

A marginally wiser Jimmy checked with maintenance to see what they'd found. TSgt Sykic from the Electric Shop said a foreign object had closed the circuit in the normal trim system, and the problem had been compounded by a separate and unrelated failure in the alternate trim switch.

As he drove home that afternoon, Jimmy thought, "I almost pulled a C. R. Terror today! Jamjet, you sly fox, you lucked out again. Maybe I do have something to tell those clowns on THE MAC FLYER after all . . ."

SYM	DATE DISCD	CODE	DISCREPANCY	JOB CONTROL NO.	CORRECTIVE ACTION
X	75/01/03	C	RUNAWAY NOSE UP PITCH TRIM.		
			CONDITION BROUGHT UNDER		
			CONTROL BY DISCONNECTING		
			TRIM.		
					DATE CORRECTED / /
	DISCOVERED BY: J. Jamjet, Capt.			CORRECTED BY	INSPECTED BY

The Starlifter had touched down and its crew was preparing for a touch-and-go when, suddenly, the aircraft lurched skyward at a 35-degree nose high angle. The two startled pilots pushed forward on the yokes but still couldn't control pitch attitude. The C-141 staggered dangerously near stall speed.

Fortunately for this crew, they were up on their procedures and finally managed to get the aircraft back safely after spiraling upward precariously for several minutes ("Good Show," THE MAC FLYER, June 1974).

This particular incident was caused by a runaway pitch trim, one of several flight control problems that have plagued the Starlifter periodically. Two more pitch trim incidents occurred last year at this same MAC base; at another, a yaw damper system malfunction caused a dutch roll and the eventual flameout of two engines on one side; and a defective aileron artificial feel spring problem caused serious aircraft control problems at a

C-141 Flight Control System Reliability

Behind the scenes is a group of folks working hard to solve your Starlifter's control problems.

Pacific base. These are only a few of the control problems the aircraft has experienced.

The frequency of such flight control malfunctions on the Starlifter caused the revival of a special task force group in March 1974 to help solve the dilemma — a "revival" because the flight control task force is not new. Implemented in 1967 after a meteoric rise in control problems, it went into semi-retirement in 1972 after the group had identified and corrected more than two dozen design deficiencies and the incident rate had leveled off. But during the first quarter of 1974 the incident rate reached an unprecedented high of 19.9 per 100,000 flying hours. Elevator pitch trim, aileron, rudder, rudder trim, and yaw damper problems accounted for most of these incidents.

That's how the rate stood in March, when the task group reassembled. By the end of October the rate had dropped to 12.6. If that figure holds up for two more months it will be the lowest since 1970.

One of the methods used by the group to obtain this reduction was to go into the field. During visits to C-141 units the group looked into troubleshooting procedures, technical data adequacy and compliance, shop manning and skills, compliance with work card items during isochronal inspections, training, availability of special tools and equipment, logistic support problems, hardware, lubrication, and aircrew reporting of flight control problems.

In most troubleshooting areas, according to task group members, adequate skills do exist and good flight control maintenance is being performed. But several problems were detected. One was that since neither the maintenance nor pilot handbook defines allowable spoiler system (split spoilers) limits, a running controversy has developed between flight crews and maintenance personnel over just what constitutes a malfunction. The need for additional tech order data changes on this and several other similar problems were identified during the group's visits.

Another basic tool used by this analytical group in the search for a permanent solution is the Unsatisfactory Materiel Report (UMR). Each report is analyzed by MAC and AFLC personnel. Findings, subsequent maintenance actions, and results of teardown analysis are reviewed by task group members and materiel and procedural problems receive prompt attention.

The favorable results registered so far by the task group have been due partially to help of crew members and maintenance personnel on the line. The task group can't be everywhere at once so it is counting on you to thoroughly document flight control problems that occur on your aircraft. As a maintenance man or woman, you also contribute to the effort by asking detailed questions during debriefing, using approved troubleshooting methods, and following tech data to the letter.

Cooperation between maintenance personnel, flight crews, and AFLC engineers and technicians is the most essential ingredient in this reliability program.

by Capt Jesse R. Stevenson
MAC/LGMWA
Scott AFB, Ill.

Task Force efforts are paying corrective benefits.

For Fools and Se

by Col F. Max McCullar, USA (ret.)
Former Commander, USAAAVS

Years ago at Fort Myer, Virginia, while I was company commander, two of our soldiers got into a little difference of opinion one night in the barracks, and in the end one punched the other one in the nose and knocked him head over heels down a stairway. The first sergeant and I got them to shake hands, had them patched up, got them back to duty and promptly forgot about it. About a week later the post safety officer came by and asked, "Where's your report of the accident?"

"What accident?" I asked.

He said, "Well, one of your soldiers knocked another one down the stairs."

And I said, "That was no accident. He meant to do it."

In looking at some of our so-called aircraft accidents I wonder how many of them truly meet the definition of an accident. In some of them it would appear that the pilot meant to do it, almost as if he had planned it.

I'm often asked to give my views on the subject of aviation safety, or accident prevention, as we prefer to call it, and I'm always willing to do this. I like to employ a technique I picked up from Chaplain (Colonel) Owen Shirey, the former post chaplain at Fort Rucker, Alabama, now retired.

Chaplain Shirey always said if you want someone to understand what you're trying to say, first tell him everything it isn't.

Now on safety I want to tell you everything it isn't. This will help clear your mind of these things and we can concentrate on the things I think safety is. Safety isn't a monthly safety meeting, although it has a part in the overall program. Safety isn't a yellow line painted on a ramp or hangar floor or a fire extinguisher hanging in a corner. But these also play a part. Safety isn't a magazine article or poster, but they have their influence.

I could go on and on but I think this gives you an idea of what safety isn't. So what is safety? It can be summed up in one word. That one word is discipline. Early in our military careers we learned that discipline is the willing obedience to orders. In the case of aviation, those orders take many forms, such as regulations, tech orders, OIs, and so on. These are the orders that direct how we should operate our aircraft.

You may have heard it said that regulations are written for fools and second lieutenants. My idea is that regulations are written from hard experience. Someone went out, crashed his aircraft, injured or killed himself or his passengers, and then we wrote the rules.

In the early days of aviation we had our first case of fuel exhaustion — ran out of gas. Being thinking people we then came up with a rule concerning fuel management. And that rule is that the fuel will be managed and the flight will be planned and executed so the aircraft will arrive at the destination airfield with a prescribed number of minutes of fuel reserve. Now that's quite simple. If everyone followed this regulation we would never have another case of fuel exhaustion. With proper fuel management, that 20-minute fuel warning light would never come on.

But let me tell you a story. This actually happened just recently. We received a crash facts message concerning a UH-1 that had engine failure after 2 hours and 45 minutes of flight. We queried our computer to give us the last 10 confirmed cases of fuel exhaustion in a UH-1H. The time of flight in these 10 cases varied from 18 minutes from pitch-pull to crash to 2 hours and 34 min-

cond Lieutenants

Explaining what flying safety isn't often helps explain what it is.

utes total flight time. I then told the unit their suspicions of engine failure might very well prove to be correct but I suspected fuel exhaustion. This later proved to be the case. I then informed the unit that they had set a new fuel exhaustion record of 2 hours and 45 minutes.

Back in the dark ages, a fastener came loose, a bolt slipped out or a nut worked its way off and we, again being thoughtful people, came up with a set of rules. The rules are that every fastening device will be safetied somehow with a piece of wire or lock washer or double nut or self-locking device, and then this thing will never happen again.

Yet, what has happened? Not too long ago an OH-6 took off and climbed to about 200 feet. You've probably discussed over a beer what would happen if the Jesus nut ever came off a helicopter. I'll tell you what happened. This one came off and the main rotor of that OH-6 left it like a frisbee, with disastrous results and two fatalities, proving again that from time to time the laws or rules of man concerning the behavior of man can be violated and gotten by with. However, the laws of gravity, the laws of physics and the laws of aerodynamics will be obeyed or end in disaster.

Disciplined crews don't chase coyotes with their aircraft.

We have rules of flying covering just about every conceivable situation. However, we can't write a rule to cover every possible situation. Let me cite you another case. Two pilots aboard an OH-58 were flying over the countryside when they spied a coyote and, having nothing better to do, began chasing it across the prairie. Eventually they were able to put the main rotor blade through the coyote. This feat, as you will recognize, exhibits very skillful flying. It killed the coyote and was also disastrous to the helicopter. It

Fools

tore it all to pieces. Luckily, no one was injured. I don't know that we ever wrote a rule saying don't chop coyotes in two with your main rotor blades. This is a little bit beyond comprehension. Sooner or later common sense has to apply.

We, as well as the other services, long ago gave up the idea of citing a primary cause for each accident. Our accidents are coded under one or more of ten possible cause factors. The cause that has always appeared in more cases than all the others is this thing called crew error. Most accident investigating boards and reviewing and approving officials believe that because a pilot is present in most aviation accidents he must have done something that he shouldn't have or did not do something that he should have done and thereby caused the accident.

Contrast this with the fact that maintenance problems and engineering design problems seldom appear as cause factors. I believe our aircraft are pretty well designed and screwed together — if they weren't, I would never set foot in another one. So let's discuss for a minute this thing called crew error and see if we can tie that in with discipline or the lack of it.

In more cases than not, in crew error accidents there has been a breach of discipline that is perhaps the primary — if we could name a primary — cause factor. I'm reminded of a friend of mine who went off to college to study logic, that is, cause and effect. As a requirement in this particular course of study he had to write a paper. So he took his notebook and pencil and went into the field to make his observations. He came back and wrote the paper. His conclusions were that the wind is caused by the wild waving of the trees. This is a common experience. You've seen it. When the trees begin their wild waving the wind immediately starts to move and we hear that whooooooosh sound. I can go further and say that, according to my own observations, out in western Kansas and Colorado and the plains states where there is a scarcity of trees, the windmills can stir up quite a breeze.

I've often told this story to the students of our accident prevention classes at USAAAVS. Early one morning I told a class of 32 students that the wind is caused by the wild waving of the trees and did not get one indication, not one lifting of an eyebrow or the upturned corner of the mouth, or any hint that this met with disbelief. Later I called out our chief instructor and told him, "Look, we've got 32 people in there who either believe that the wind is caused by the wild waving of the trees, in which case we have a problem, or they believe that I believe that the wind is caused by the wild waving of the trees, in which case we have a worse problem."

What does this story have to do with accident prevention? Simply, that man is the cause and the effect is the accident, not vice versa.

Since crew or pilot error is listed in 70 percent of our accidents, this promises to be the most fertile field to plow in the business of accident prevention. What can we do about it? We can increase the discipline of the pilot and require him to operate the aircraft in the manner in which it was intended to be operated.

Last year I came across an article in one of the trade journals written about Petroleum Helicopter Industries. They operate out of Lafayette, Indiana, and service offshore oil drilling rigs. In this article they very proudly announced that they were second only to the Army in the number of helicopters they operated, but they operated them better than anyone else in the world. This aroused our curiosity to the point that we contacted Petroleum Helicopter Industries, arranged a meeting in Lafayette and spent some time with them.

We were impressed when we walked into their maintenance hangar. Every opening was capped, everything was in its proper place, the hangar was spotlessly clean and the workmen went about their business in a businesslike manner. It was a beautiful sight to see. In talking with the operations personnel we learned that Petroleum Helicopter was very selective in their choice of pilots. Most of them were former Army helicopter pilots with considerable experience.

The operations people went on to say that after hiring a pilot they sent him to the company ground school and flight school to teach him to operate the company aircraft as the company wanted its aircraft operated. And then they saw to it that he did. Somehow, over the years, we seem to have drifted away from this idea and all too often we allow the pilot to operate the Army's aircraft as

the pilot thinks it should be operated.

Let me tell you a story about another civilian contractor. The operations officer had laid on three flights for that particular day, a Sunday. After he had gotten everything squared away, he went to the golf course. While he was on the third or fourth tee a helicopter took off. He glanced at his watch and noted that it was right on schedule and noted later that it returned right on schedule. This happened a second and a third time as he continued his golf game. Then, to his surprise, a fourth helicopter took off. Knowing there was no fourth flight planned, he immediately laid down his golf clubs and got himself to the operations shack. It didn't take long for him to determine what had happened. The pilot of the fourth flight had decided to take a friend on a quote — maintenance test flight — unquote, during which they intended to go along the beaches and pick up those round glass floats the Japanese use on their fishing nets. When that pilot came back in that aircraft, the company handed him his pay and a ticket back to the states. He was no longer employed by that company.

There was probably nothing we would term unsafe in this particular flight. But the pilot did exhibit a lack of self-discipline. That is, he put the aircraft to an unauthorized use for his own purpose, and was made to suffer the consequences for his act. Luckily for him, this was dismissal rather than death or injury.

The action by the company in this particular case illustrates the application of the word "discipline" in its verb form, meaning to punish rather than to teach, as in its noun form. And when this form of discipline comes into play, self-discipline has somehow failed.

Commanders have told me they are unable to be present in every cockpit and once the aircraft is off the ground the pilot is on his own. But I feel that while each commander cannot be physically present in every cockpit on every flight, his presence can be felt in that cockpit. His presence would be the attitude, the climate, and the atmosphere that he has established through his own example, and the requirements he places on his subordinates and crews.

A large number of our Army aircraft accidents could have and will be prevented through this thing called discipline, preferably self-discipline; but in the absence of self-discipline, then applied discipline.

— U.S. ARMY AVIATION DIGEST

Follow the company rules or risk all you've worked for.

A C-5 materiel task force eyes the NORS rates closely to help you get spare parts ASAP.

Getting the C-5

"The aircrew is the focal point,
That needs the bird in tune.
Mechanics are pressed to make it hum,
They want the parts — and soon!"

You crews who push the C-5 around the globe may not be aware of it, but helping you around the system is a group of MAC specialists whose primary job is to keep broken aircraft from sitting on the ground at some remote airfield.

Theirs is one of those rather thankless jobs that consumes a great deal of time and generates stacks of paperwork in the process. Say you've never heard of these folks? Not many outside of the maintenance-supply circle have. Nevertheless, they're very much in business.

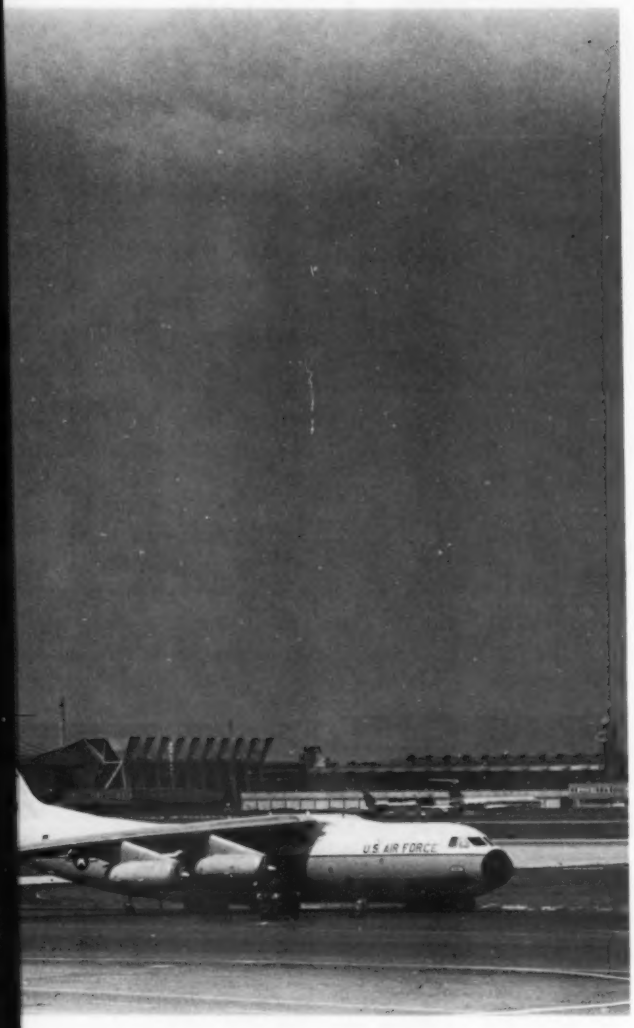
They're known as the C-5 Materiel Task Force. Specifically, their job is to identify spare parts that contribute most to the NORS hours on the Galaxy. And one measure of their success is the decrease in the number of times aircrews find themselves standing in line waiting for a room and bed at places like Incirlik ,Turkey, because their C-5 needs an unavailable part.

If you've recently spent a night or two in an open bay barracks in some far-off place, you might be tempted to write this task force off as "inoperative" but without this special group you probably would spend more nights there singing the old barracks house blues.

At first glance their job might seem overly simple — just count the NORS hours caused by specific items, select the items that contributed most, and shoot off a message to everyone concerned to do something about it. But identifying the specific supply item is not the real problem, although that's

This big bird won't fly without parts.

Off the Ground



a job in itself. The real problem is identifying what causes the shortage of these NORS parts and determining how to remedy it. And that definitely is not simple.

Members of this team, all handpicked, are from MAC headquarters, and Travis, Dover, and Altus AFBs. They meet monthly at San Antonio Air Logistics Center (ALC) and concentrate on correcting the deficiencies causing shortages of critical parts.

Just exactly how they solve these problems might not interest you unless you have a maintenance background, and it could take volumes of space. But the team very definitely gets results.

For example, when the group was first formed there were 15 troublesome supply items, such as the AHRU gyro and coupler, MLG gearboxes, and the doppler system, which were causing tremendous concern to MAC commanders all up the line. After the team had been hard at it for about five months, the NORS hours on these items dropped by a whopping 80 percent. That means you probably watched more televised football games at home and took your wife out to dinner more often than you would have without the task force.

The team has been successful in its mission, but there are many more variables in solving NORS-G problems than can be solved by a particular task force. So don't blame the team members for all of your NORS problems.

The C-5 Task Force obviously is not officially linked with safety, but the safety implications are clear when considering the necessity for properly working parts on any aircraft. And, as inconspicuous as the task force may seem to those of us who fly the line, the results of their efforts often become highly visible when a Galaxy breaks down.

After all, who wants to go NORS-G in Rio?

The Aerial Ace laments as his 1974 transgressions are recalled.

C.R. TERROR

You win, Sammy. Just couldn't move around much with my gimpy ankle. Otherwise you would now be a member of that fraternity of unsuccessful challengers who have fallen in the wake of the North American football champ."

The Gridiron's Greatest rationalized to comfort himself after a bruising defeat by his young copilot's team. C. R. limped with genuine pain as he, Sam, and Blinky headed for the bar and post game refreshments. Beads of perspiration glistening on C. R.'s shiny dome gave evidence of a not-so-cool contest.

"How's that peg doing, boss?" asked Sam smugly, hoping to divert C. R.'s conversation from his hallucinations of football grandeur.

"A bit sore, Sammy. This little setback probably will keep our crew off the flight schedule for at least another week. Doc Greenfield put me DNIF until further notice — sorry you guys will have to delve in ground duties while I recuperate." C. R. heaved his torso onto a bar stool as the bartender placed a stemmed glass in front of him. "Thanks, my good man. This should help nurse the wounds of defeat."

The copilot shook his head with obvious concern for his boss's injured ankle. "Spraining your ankle on New Years Eve is a heck of a way to start a new year. Looks like another bummer coming up for you, huh?"

"Whadaya mean, another bummer? Why 1974 was an excellent year. Nothing but triumphs — month after month."

Blinky saw an opening and took this rare opportunity to needle his cocky boss. "Er, boss, I thought 1974 started out bad for you. Didn't you have a little problem on your instrument check in January?"

C. R. frowned. Why did he have to bring this up? "No, er, well, no. Started 1974 out by demonstrating my prowess to Major MacZaminer in January. Showed that weenie what instrument flying was all about."

Long Suffering Sam, fortified by two sips of beer, bravely decided to challenge his arrogant leader. "But, sir, I thought you were grounded for a while after that checkride. I never did get the details on it, though. Care to tell us about it?"

"Harrumph. Well, yes, that's true. I did take myself off the schedule after completing all those annual burdens. Had lots of paperwork to finish. Yes, remember MacZaminer well. He was the one who used obscure regulations to try and embarrass me. Luckily, I finally convinced him that flying skill is what's important, not some out-of-date jargon."

As the chubby pilot shifted his bulk, his two companions shot smiling glances at each other.

"Sir, I remember a not-so-pleasant experience in February. Remember when we got a little short of go-juice between Yokota and

Travis? I didn't know if we were going to get the bird on the ground or not before the engines flamed out." Sam was baiting his leader.

The Able Aeronaut was not to be done in. "A mere miscalculation on the part of the operations center. Why, had I not caught their error in flight and squeezed some fuel out of hidden corners of the tanks, we might have had real problems. But you will remember I handled the emergency situation with stoic composure. Never did figure out why the general was so mad. We brought his aircraft safely back to roost, didn't we?"

Blinky just couldn't resist. "Maybe it was because we hurried out of Yokota without onloading flight plan fuel load."

"Preposterous!" shouted the usually calm Master of Wires and Tires. "He probably just had a bad olive or something the night before."

"Hey, boss," chirped the copilot, "I recall we had a little difficulty following the recent changes of a SID back in March — remember, we didn't think we needed the SOF briefing and never got a SID."

Pleading eyes this time threw a quick glance at the speaker. After an uncharacteristic pause, C. R. replied defensively, "It was the SOF. I wanted to get all the information available but the SOF didn't do his job. The AC has to do everything these days. If we hadn't hit that clear air turbulence, we'd have gotten on course in a short time anyway. You got any more bad news about 1974?"

"Well, sir, there was an in-flight depressurization in April," returned Blinky.

"A minor annoyance, me lad," rationalized the Famed Fable Teller. "You'll recall General Fang came to see me at the hospital

to personally congratulate me on bringing the sick bird back to terra firma. Even wanted to put me in for a medal but got bogged down in red tape. Even generals have trouble cutting the red tape to reward the troops."

The Fearless Flier called for another round. With that awkward finesse so characteristic of veteran MAC fliers, he outfumbled the copilot and Sam begrudgingly dropped a fistful of money on the bar.

"Sam, what were you telling me about your flight in the H-3? That was about May, wasn't it?" Blinky was pushing his luck.

"Oh, yeah," Sam answered, then turned to C. R. "Remember our flight up to Lake Steelhead, boss? We sure had a time explaining why we sank a perfectly good helicopter."

"Cheez, Sammy! You remember everything, don't you?" growled C. R. "But you always get the facts wrong, which is why you're still riding right seat. Fortunately, it didn't take the commander long to see that my superior skill as a rotor winger prevented loss of life. I can't help it if the Jolly Green

wouldn't float as advertised."

Sam was silenced momentarily and sat fumbling with his glass, so the navigator took the lead. "You still think you had a good year in 1974, in spite of the, ah, misunderstandings you were involved in?"

"Well, like I said, none of the incidents could have been prevented. Only through superior skill and cunning did I manage to avert disaster. Praise and thanks to me from all concerned made 1974 a good year indeed."

"But, chief, you call your escapade as SOF at Torrejon part of your good year? Tell us about your duties." Blinky's eyes laughed through the bottle-like thickness of his glasses.

The paunchy pilot squirmed before continuing. "A man doing an important mission — and some commander makes a federal case out of it. He never did apologize for his rather strong language. I tried to explain that the two senoritas were guests and I took them into the C-5 to breed better international relations. He never saw it that way, but then, Blinky, he wore coke bottle glasses, too." Blinky slid down on the barstool, embarrassed.

"Well, our year about came to a close early on one flight," reminded the copilot.

"Which one are you talking about now?" demanded the Aviator with Avoirdupois.

"Remember when we took off with frost on the wings? We nearly bought the ranch. Letting the carburetors ice up didn't help either. Let's see, that was just three months ago. Cold weather operations almost got us."

C. R. shook the cool liquid in his glass. "Can't trust Sergeant Torque sometimes. He should have been watching those carb heat gages. But what was he doing? Walking around the cabin, that's what. No wonder we had problems."

"Didn't you tell him to scan the engines and wings from the cabin?" asked the lanky right seater, regaining a mild sarcastic manner.

"Well, I wanted him to check the condition in the back but I didn't expect him to take leave back there," C. R. shot back in a verbal counterattack.

"You at least had a good year when you weren't flying," interjected the nav. "I remember a tough aerobics test, heh, heh."

"Funny you should bring that up. As a matter of fact I broke a record when I took my test in

November. And I met a very shapely Lieutenant Shapely at the same time. See what I mean about 1974 being a good year?" A lecherous grin spread wide across the Lothario's face.

"Maybe you could say 1974 was a good year," smiled Blinky. "It all depends on how you view it."

"But, boss, what makes you feel 1975 will be so good when you start right off with a sprained ankle?" queried Sam again, his opportunity to put down C. R. now fading fast.

The World's Greatest fielded this question in his usual sophisticated manner. "Well, you see this little malady has given me time to take care of some pressing matters on the ground. Neither wind nor storm nor ankle sprains can keep a real aviator out of the skies. And look at it this way —"

"What way, boss?"

"— the sprain kept me out of the commander's New Years Day reception," chuckled C. R., flipping an olive between his grinning lips and winking at the mini-skirted cocktail waitress who walked by.

Preventive Tracking

Engineers are keeping tabs on your aircraft's fatigue — through your reports.

Rugged performers though they are, C-141s, C-130s, and C-5s are not immune to fatigue. And, unlike man, these machines don't complain about their annoying aches and pains until their condition warrants extended "R and R." It's up to those of us who fly and maintain these workhorses to keep tabs on their physical conditions — if this is not done, the sturdy old girls might just sit down on the job.

Fatigue cracks or failures are a real possibility after thousands of hours of takeoffs, landings, and flights that carry us bouncing along through weather or on low level routes. Potential structural trouble areas have been identified, but before the maintenance folks take a bird out of service and tear into its inner workings, they must know that the "proper" time has arrived. The proper time for this particularly exploratory surgery follows a predicted amount of structural damage. Who keeps track of this damage? The flight crews do, through usage report inputs in the "preventive tracking" program.

The term preventive tracking is applied by some engineers to describe structural fatigue monitoring of C-141, C-130, and C-5 aircraft. Fatigue accumulates more from specific aircraft use than by how many hours it flies and we, as aircrew members, are on the spot to document loads, weights, altitudes, airspeeds, and the like, on AFTO Form 451 for C-141s, AFTO Form 151A for C-130s, and MAC Form 89 for C-5s. Engineers compile these figures on a master log for each aircraft. From this data, they predict when an aircraft should be pulled off the line for an inspection or modification. A lost, late, or inaccurate form degrades fatigue predictions — so aircrew inputs are very important.

A computer maintains the facts, which are studied and compared with those of other airframes, to predict when a bird is likely to experience fatigue problems.

Rest assured, the structural integrity of the aircraft you fly is constantly being monitored — through your inputs — so the next time you make those entries in the 451s, 151As, or 89s, keep in mind that you're helping the doctor keep an eye on your sturdy, but aging, companion.

Quick Stoppers

Plugged Line Punishes Engine

Engine oil pressure on number one engine suddenly dropped to 5 p.s.i. as the T-39 climbed toward its assigned altitude. The pilot retarded the throttle and shut down the engine. After declaring an emergency and jettisoning fuel, the pilot maneuvered his crippled aircraft into the traffic pattern. On final approach, the aircraft went out of control and crashed, killing both crew members.

If you don't recall this accident immediately, don't press your memory. It never occurred. But the engine oil problem did and caused a single engine landing. The point of the dramatization is to emphasize that this T-39 should never have experienced the engine problem. What happened then?

Investigators found the engine oil tank outlet blocked by a piece of plastic oil sampling tube. While taking a SOAP sample, a maintenance person had ripped the tube apart after it became entangled in the oil tank baffles. Part of the tube remained in the tank and subsequently clogged the outlet.

This kind of carelessness might have caused a crash such as the one fictionalized above. Fortunately, it didn't. Making a mistake is human, but failure to correct it can be fatal.

Unwanted Acceleration

The Starlifter pilot brought the throttles to idle as he slowed down to enter holding. As the aircraft reached desired airspeed he advanced the throttles, but number three engine did not respond to the throttle command. A few seconds later the engine r.p.m. began accelerating and couldn't be controlled, so the pilot shut the engine down using the fire "T" handle. He landed the bird at home station on three engines.

What had caused the strange throttle problem? A bolt from the throttle linkage was found lying inside the engine cowling. Its nut and cotter pin couldn't be found. The suspected cause is that the pin was left out during maintenance, allowing the nut to back off. Subsequently, the bolt backed out and caused the throttle linkage to separate. The organization at which this incident occurred is now enforcing the policy of placing aircraft on a red "X" when performing throttle or fuel control linkage maintenance.

Another Case of Depressurization

The C-141, with 37 passengers on board, climbed toward cruise altitude. At 22,000 feet, without warning — whoosh! The horn blast in the cabin signaled a rapid depressurization as the cabin altitude shot up to aircraft altitude.

Crew members quickly donned their oxygen masks and the pilot initiated an emergency descent. Meanwhile, the loadmaster, assisting the passengers with their masks, discovered the right hand oxygen regulator had not come on automatically as it was supposed to. He flipped the regulator switch to start the oxygen flow.

The pilot directed his crew to check everyone for adverse physiological symptoms. No one appeared the worse for wear so he continued on to destination at 10,000 feet without repressurizing the bird.

The depressurization was due to the ramp unlocking and separating from the right side of the fuselage. Two ramp attachment points cracked and the guide pins on all five hooks on the right side of the ramp sheared, preventing the ramp from relocking. The incident is still under investigation.

When the pressure suddenly went sour, this crew applied their emergency training without a hitch. They had lots of praise for the quick donning masks.

The Cost of Being Zapped

As the HH-53 ginned along in the weather near the top of a light cloud deck, a blinding flash startled the crew as lightning struck the helicopter. The crew expected the worst, but were relieved to discover there were no unusual vibrations, noises, or control difficulties. Nevertheless, the pilot descended into visual conditions — and landed at home base without incident.

Neither ground radar, this crew, nor another crew which had flown the same route 15 minutes earlier had detected any thunderstorm activity within 20 miles.

Post flight inspection left no doubt that lightning had struck: damaged were five main rotor blades, two tail rotor blades, and the aerial refueling probe. Main rotor blades have a going price of $12,934, tail rotor blades cost $5,143, and the probe sells for $14,420.

Failed To Get the Word

As a tanker churned down the runway for takeoff, passengers pointed to a leaky fuel line in the cabin. A crew chief quickly discovered that the leak was coming from a disconnected APU line. He stopped the fuel flow by holding the line with his hand, and the pilot declared an emergency and returned to base.

The cause of the leak was easy to determine. There are a couple of procedures to follow when capping an APU fuel line — one for a grounded aircraft and a different one for a mission-ready aircraft. The maintenance man who did the capping did not know the aircraft was scheduled to fly. He hadn't gotten the word.

Binding Controls

On liftoff the C-130 pilot began easing the yoke forward to establish the desired aircraft attitude. To his dismay, the control column wouldn't budge from its aft position. With adrenalin flowing, both pilots pushed hard on the yoke and broke it free. A precautionary emergency landing followed without incident.

The old "bolt installed backwards" trick had nearly claimed another crew. When the pilot moved the yoke forward, a bolt in the elevator cable tension regulator hit the floor support brace on the copilot's side, binding further control movement.

Such close calls point out the need to thoroughly check flight control operation before calling "Max power."

Qs

FOD Wins Challenge

It was a perfect day for flying. One refueling stop and then home from a long trip. The pilot of a large jet transport applied power on takeoff roll at the stopover base and then felt a sinking feeling in his stomach as he heard an engine compressor stall. The takeoff was aborted and the aircraft returned to the ramp with the faulty engine shut down.

Maintenance personnel told the pilot he'd be there a while. They had found the unmistakable imprint of a bolt on one of the compressor blades and the engine had to be changed. Junk lying around the ramp or on the runway had done it again! Congratulations FOD, you've lived up to your name.

Ice Fouls up C-141 CADC

Shortly after flap retraction in a C-141, the artificial feel light illuminated. The pilots checked their altimeter and airspeed readouts and found a 40-knot discrepancy and a higher altitude indication on the pilot's side. As the aircraft continued to climb, airspeed and altitude discrepancies continued increasing and the aircraft commander, referring to CADC number two information on the copilot's side, leveled off at flight level 190.

The pilots assessed the differing CADC indications which were as follows: CADC number one indicated airspeed 350 knots and flight level 250; CADC number two indicated 200 knots and flight level 190. Altimeters at the engineer's and navigator's stations indicated flight level 190. Confirmation of doppler ground speed by air traffic control radar tracking verified the 350 knot airspeed reading of CADC number one.

Using CADC number one information, the aircraft commander slowed the aircraft to 250 knots, requested holding, and advised ATC of the aircraft's unreliable altitude readouts. Still using his own airspeed indicator and the copilot's altimeter, the aircraft commander nosed the bird up to flight level 220. Now, the pilot's altimeter indicated flight level 310. No cockpit fault lights illuminated and no cause of the malfunction could be detected. The crew checked the pitot lines into the CADCs and isolated the affected pitot static system with the manual shutoff valves; but the instruments remained unmoved. Conference Skyhook was initiated and, due to poor weather on the east coast, the aircraft reversed course and headed back toward its departure point. The C-141's altitude was confirmed at flight level 310 by a nearby commercial airliner.

At the direction of MAC Standardization, the more experienced aircraft commander, flying as copilot, got in the left seat. The aircraft descended to 10,000 feet and, after the crew performed controllability checks in the landing configuration, landed without incident.

The suspected cause of the differing CADC readouts was a ruptured line in the pitot static system, caused by water freezing inside.

after deadline . . .

LAST CHANCE INSPECTION -- The two maintenance men stepped from the SOF vehicle and were soon beneath the C-5 performing the last chance inspection just prior to takeoff at Altus AFB, Okla. While checking the landing gear, one of the men noticed hydraulic fluid dripping from the fuselage. The crew was notified and in a few minutes personnel were inside the lower fuselage trying to find out what was wrong. It didn't take them long. Hydraulic fluid was pooled an inch deep on the floor of the lower fuselage -- the result of a massive valve leak. If you tend to question the value of the SOF's duties, just think about that for a few minutes.

RECIPROCATING ENGINED AIRCRAFT TO GO -- After years of faithful service, MAC's piston-powered aircraft are finally being retired. C-118s, C-131s, and T-29s will be phased out during the next few months. We're in a period of austerity, and the older birds no longer accomplish the mission economically. Many a crew member will watch with nostalgia as the former greats wing their way to their retirement place in Arizona.

NEXT MONTH -- Feature articles next month include:

* Welcome, Former TAC Troops -- A warm welcome to all former TAC, AFRES, and ANG personnel joining the MAC team.

* Boy Called Nav -- A poem by a navigator about a navigator and his plight with his mean old man.

* Flight of Hatch 38 -- Ride along on a local flight and see the results of an instructor illegally compounding emergencies.

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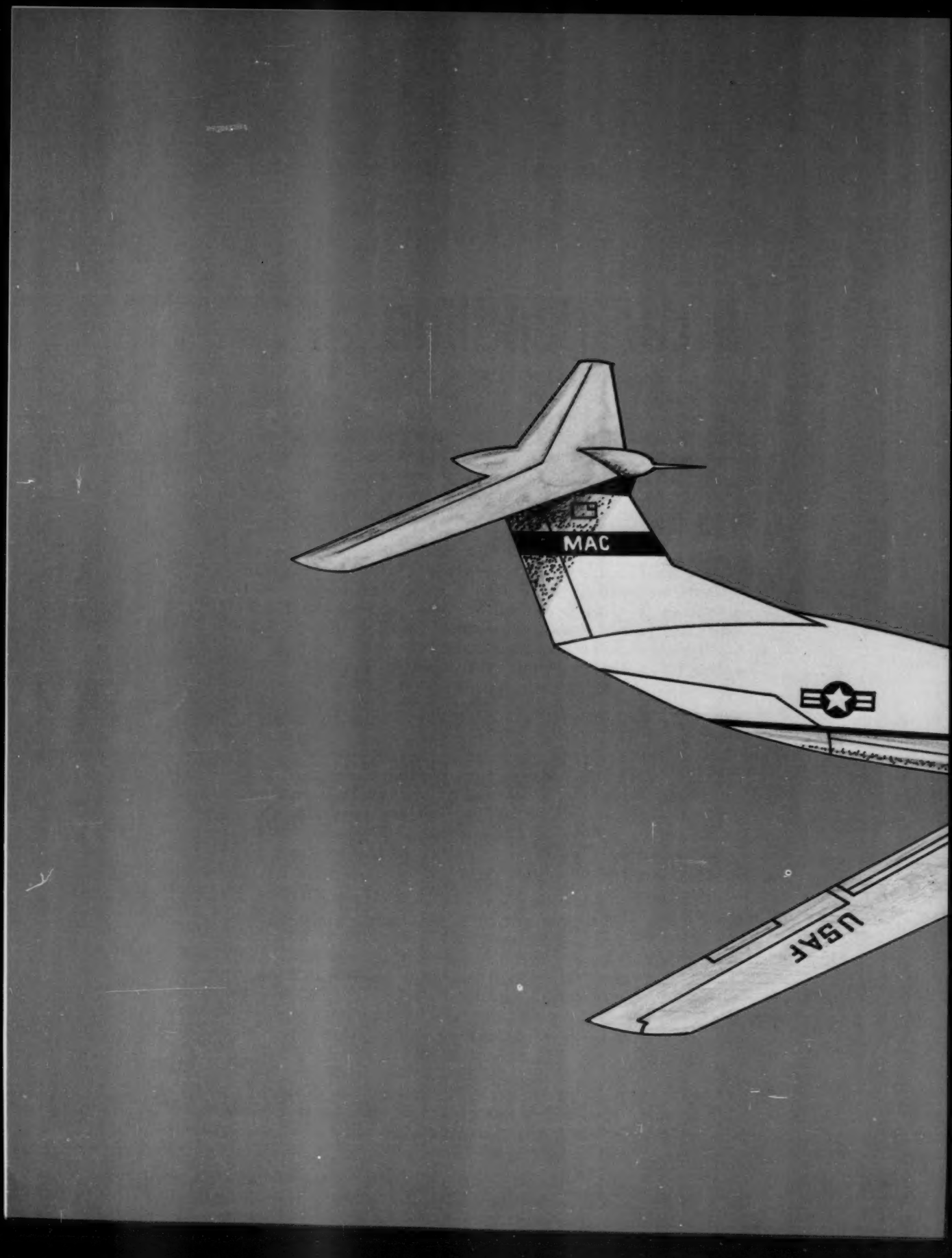
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